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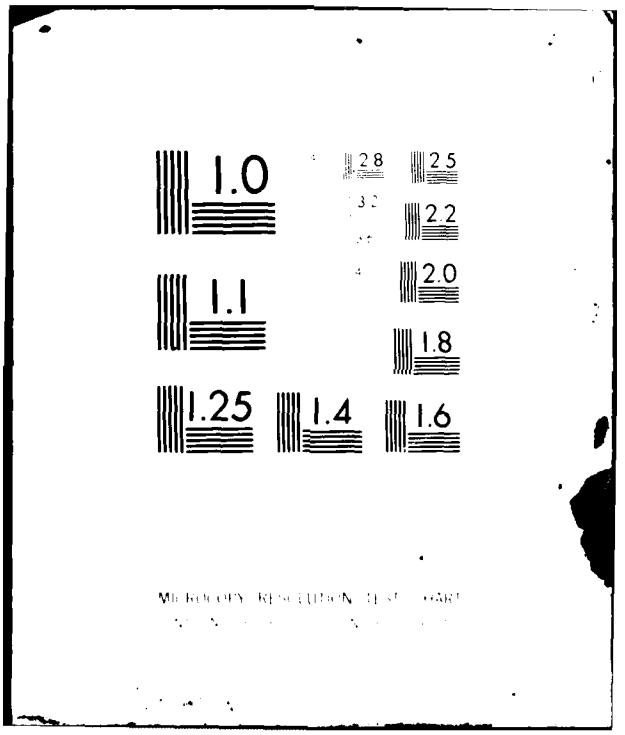
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UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

HUMAN RESOURCES DIVISION

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(11) 18 SEPTEMBER 1981

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The Honorable Charles H. Percy
and Alan J. Dixon
United States Senate

The Honorable Henry J. Hyde,
Sidney R. Yates, Edward J. Derwinski,
Philip M. Crane, John N. Erlenborn,
Dan Rostenkowski, and George M. O'Brien
House of Representatives

(6) Subject: The Veterans Administration's Efforts to Consolidate Computer Programming Resources at a Single Location (HRD-81-148)

This report is in response to your March 19, 1981, letter requesting that we review the Veterans Administration's (VA's) efforts to establish an Automatic Data Processing (ADP) Centralized Development Center (CDC) in Austin, Texas.

In July 1980 we reported 1/ that VA needed to improve the management of its ADP resources and recommended that a separate staff of ADP analysts and programmers be established to work on system development projects and assign skeleton crews for system maintenance. In January 1981, after studying the feasibility of centralizing development resources at a single location, VA initiated the implementation of the CDC at Austin.

The CDC was to centralize most computer program development and maintenance resources previously assigned to VA's five data processing centers (DPCs). This would involve transferring development and maintenance work and associated staff from the DPCs and VA's central office to the CDC. VA estimated, in August 1980, that VA benefits would exceed costs by $2.5 million over 5 years of operation. These savings were based on eliminating DPC personnel positions expected to accrue from implementing the CDC.

1/"VA Must Strengthen Management of ADP Resources to Serve Veterans' Needs" (FGMSD-80-60, July 16, 1980).

(400478)

As agreed with the offices of Senators Percy and Dixon and Congressman Hyde--who acted as representatives for the requesters--we limited our review to examining the (1) adequacy of VA's estimates of costs and benefits of establishing the CDC at a single location and (2) basis for projected personnel savings.

In summary, VA's estimates of costs and benefits, made through the end of April 1981, were neither complete nor comprehensive enough to determine whether the CDC was cost beneficial. Further, estimated personnel savings were based on a methodology that (1) employed an invalid statistical measurement and (2) was not sufficiently documented to permit independent verification. The enclosure discusses our review and, as requested, details of our analysis.

The CDC was to be substantially implemented by the end of fiscal year 1981. By the end of June 1981, most DPC development systems had been transferred to the CDC, and about 60 percent of the CDC personnel positions had been filled. However, the transfer of the Hines (Illinois) DPC systems and staff to the CDC was delayed as a result of internal VA concerns over the transfer and the absence of a confirmed Administrator to resolve these concerns.

On July 7, 1981, we informed the Administrator-designate of our conclusions, and on July 23, the Administrator said he was not proceeding with the Hines DPC transfer and canceled the CDC implementation program.

We were told that the Administrator's decision effectively established two major VA computer development centers--at the Austin and Hines DPCs. Current proposals are to establish and separately manage development and maintenance staffs at these DPCs. Because of the Administrator's decision and since the proposals have not been implemented, we are not making recommendations at this time.

As requested, we did not obtain written comments from VA on the matters discussed in this report. As arranged, we are sending a copy of this report to the Administrator of Veterans Affairs. Unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days from its issue date. At that time, we will send copies to the Chairmen, House and Senate Committees on Veterans' Affairs, and the Director, Office of Management and Budget, and will make copies available to others upon request.

Edward A. Densmore

for Gregory J. Ahart
Director

Enclosure

THE VETERANS ADMINISTRATION'S EFFORTS TO CONSOLIDATE COMPUTER PROGRAMMING RESOURCES AT A SINGLE LOCATION

In a March 19, 1981, letter, we were requested by nine Members of Congress to review the adequacy of the Veterans Administration's (VA's) justification for establishing an Automatic Data Processing (ADP) Centralized Development/Maintenance Center (CDC) in Austin, Texas. As agreed with the offices of Senators Dixon and Percy and Congressman Hyde--who acted as representatives for the other six requesters--we limited our review to examining the (1) adequacy of VA's estimate of costs and benefits associated with consolidating most computer program development and maintenance resources at a single location and (2) basis for projected personnel savings.

BACKGROUND

VA uses computers extensively to help administer veterans' programs. The major programs in VA's fiscal year 1981 budget of $22.2 billion are:

--Medical programs, consisting of $6.5 billion for medical research and medical care and treatment of veterans and eligible beneficiaries in VA and other health care facilities.

--Benefit programs, consisting of $14.7 billion for compensation, pension, education, life insurance, loan guaranty, and other forms of assistance to veterans, their dependents, and their survivors.

The Office of Data Management and Telecommunication (ODM&T) is responsible for VA's ADP activities. These activities affect virtually every aspect of VA operations, including agencywide payroll and logistic applications, programwide systems involving billions in benefit payments, and small, localized computer programs supporting an individual pharmacy or clinical laboratory. ODM&T maintains five data processing centers (DPCs) 1/ and a staff of about 2,000 employees, who are responsible for maintaining existing ADP operations and developing new computer application systems. Before the CDC was established, each DPC had been assigned some computer program development and maintenance responsibility.

The CDC was established--at a single location in Austin--to pool most of VA's computer program development and maintenance resources previously assigned to each DPC. The original estimated

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1/In Philadelphia, Pennsylvania; Chicago (Hines), Illinois; St. Paul, Minnesota; Austin, Texas; and Los Angeles, California.

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5-year cost of establishing the CDC was $3.9 million, which was offset by an estimated 5-year benefit of $6.4 million. These benefits were primarily based on eliminating 57 personnel positions estimated to accrue from implementing the CDC.

OBJECTIVES, SCOPE, AND METHODOLOGY

The purpose of our review was to assess the adequacy of the tangible or measurable aspects of VA's justification for establishing the CDC in Austin. We examined the estimate of costs and benefits of establishing the CDC derived from comparing the costs of performing computer program development and maintenance work over a 5-year period under the

--present, decentralized or five-DPC approach and

--proposed, centralized or CDC approach.

(Within the cost/benefit frame of reference, the costs of the present approach are called benefits if they exceed the costs of the proposed approach. Further, savings or net benefits are the costs of the present approach in excess of the proposed approach.) We also examined the methodology and productivity data ODM&T used to project personnel savings to accrue from establishing the CDC. We used CDC cost and benefit data available as of the end of April 1981.

Because ADP resources are centrally managed by VA headquarters, we made most of our review at VA's offices in Washington, D.C. We telephoned officials at both the Austin and Hines DPCs and visited the Hines facility to confirm selected information. We limited our field contacts to these two DPCs because they would be most affected by establishing the CDC. Since the CDC personnel savings were approved as a staff reduction in VA's fiscal year 1982 budget by the Office of Management and Budget, we contacted the VA budget examiner for the Office's considerations of the CDC proposal.

We examined VA regulations and policies on reorganizations and ADP cost/benefit analyses. We also reviewed correspondence regarding the approval and implementation of the CDC, the minutes of ADP Review Group meetings, and studies performed by VA reporting on various aspects of the CDC's implementation. We held discussions with VA officials from ODM&T, the Office of Planning and Program Evaluation (OP&PE), the Office of Inspector General (OIG), the Office of Manpower Programs, the ADP Review Group, and the Office of the Administrator of Veterans Affairs. These discussions were made to clarify the contents of VA's correspondence and studies.

We did not prepare an independent cost/benefit analysis of the CDC, nor did we assess of the reliability of the data in VA's productivity systems—the Project Administration and Control System

(PACS) and the Automated Management Information System (AMIS). Because we were requested to concentrate on the measurable aspects of VA's justification for the CDC, we did not make a detailed analysis of intangible factors associated with establishing the CDC.

PRIOR GAO REVIEW

In our July 1980 report 1/ on VA's management of ADP resources, we discussed VA's practices for developing new computer applications. We noted that, ideally, computer analysts and programmers should be assigned to one of two staffs:

--Development staff devoted to discretionary work, including system development, redesign, conversion, and other enhancements.

--Maintenance staff to sustain system operations.

This ideal approach involves assigning a team of analysts and programmers from the development staff to perform discretionary work, such as developing a new computer system or enhancing an established system. Once the work is completed, the new or enhanced system is put into operation, turned over to a maintenance staff, and the team returned to the development pool for another assignment.

Rather than following this approach, VA assigned analysts and programmers to users to maintain specific systems--of 414 analysts and programmers, 314 were permanently assigned to maintenance. Because operational systems normally require little maintenance, we found VA maintenance staffs were assigned additional work--such as system enhancement projects. Such work was optional, and its need should have been considered in relation to the need and priority of other discretionary work--such as system development or redesign projects. Dedicating large staffs to system maintenance made it difficult to determine how many analysts and programmers were actually needed for maintenance and how many were available for discretionary work. This approach inhibited a comprehensive assessment and approval of discretionary work and, as illustrated in that report, resulted in work assignments simply to keep the maintenance staff busy.

Accordingly, we recommended that the Administrator establish a staff of ADP analysts and programmers to work on discretionary projects and assign skeleton crews to provide systems maintenance.

1/"VA Must Strengthen Management of ADP Resources to Serve Veterans' Needs" (FGMSD-80-60, July 16, 1980).

Our July 1980 recommendation was directed at improving the management of VA computer programming resources by establishing a development pool of ADP analysts and programmers, thereby permitting greater control and flexibility in making staff available for system development, redesign, conversion, and enhancement projects. To allow agency management discretion and flexibility in choosing the best method of achieving the desired objective, we did not propose a specific organization structure, such as (1) centralizing development staff at a single location or (2) decentralizing and establishing pools at the DPCs.

In responding to our recommendation, the Administrator stated in his January 9, 1981, letter to the Chairman, Senate Committee on Governmental Affairs, that:

> "In May 1980, I requested that a study be conducted to determine the feasibility of a Central Development/ Maintenance Center. In September 1980, the study was completed and I approved its concept. Establishing this facility will centralize the development of technical specifications and programming at one location, and standardize the development methodology throughout the Agency. Independent data processing centers will maintain small cadres of systems personnel for production assistance."

The CDC implementation was initiated in January 1981 and scheduled for completion by the end of fiscal year 1981. Most systems had been transferred by the end of June, except the systems and staff at the Hines DPC.

THE CDC PROPOSAL, APPROVAL, AND INITIAL IMPLEMENTATION

In an August 1, 1980, report, ODM&T presented the results of its investigation into the feasibility of the CDC concept and recommended establishing the Center in Austin. This recommendation proposed transferring system development and some maintenance work along with associated personnel from each of VA's five DPCs to the proposed CDC colocated with the Austin DPC. The only anticipated equipment transfers were from the Hines DPC to accommodate computer program development and maintenance work on systems proposed for transfer.

The August report contained a 5-year estimate of the probable costs and benefits associated with establishing the CDC. These estimates showed net benefits--consisting of the elimination of 57 personnel positions at the DPCs by the end of fiscal year 1982--beginning to exceed costs in the second year of CDC operations (see p. 6).

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In January 1981, ODM&T initiated the transfer of system development and maintenance work and about 180 employees from the Austin DPC to the CDC--both located in the same building in Austin--as the first step in implementation.

In March 1981, more detailed and updated information was prepared in an ODM&T study on the cost of relocating development and maintenance work on the Target system--a major ADP system supporting on-line development of benefit claims--from the Hines DPC to the CDC. Also, during March and April, studies were completed of DPC system maintenance transfers to the CDC.

On April 8, 1981, ODM&T provided an updated estimate of CDC-related personnel savings consisting of eliminating 48 positions by the end of fiscal year 1981. At the end of April, 11 more staff had been transferred to Austin from other DPCs and the central office.

By the end of June, about 233 of the 392 authorized CDC positions had been filled, and most DPC development and maintenance systems had been transferred to the CDC except (primarily) the Target system at the Hines DPC. The other staff vacancies consisted of 159 positions expected to be filled from the central office, the Hines DPC, or new hires in Austin.

TRANSFERRING THE TARGET SYSTEM AND STAFF WAS DELAYED

As a result of internal VA disagreements and the absence of a confirmed Administrator, VA has delayed transferring Target system development, maintenance, and associated staff to the CDC.

From the time the Administrator resigned in February 1981 until a new Administrator was confirmed in July, VA had two Acting Administrators who, on three occasions, addressed the actions needed to complete the CDC implementation--transferring the Hines DPC Target system development, maintenance, and associated staff. On each occasion, the transfer decision was deferred. Although several issues involved the risks associated with the transfer--such as the potential disruption of Target system development work scheduled for transfer to the CDC and the possible failure to retain knowledgable staff at the Hines DPC needed to maintain operational systems--the primary concern has been whether the transfer was cost beneficial.

As a result of concerns expressed by VA's OIG and OP&PE, 1/ the Acting Administrator met on April 3, 1981 with representatives from ODM&T and these offices. By April 3 memorandums, OP&PE and OIG recommended that, because of the many questions and the controversy surrounding the transfer of Target system development and maintenance activities, a decision be deferred pending completion of a detailed evaluation. The Acting Administrator requested ODM&T, OP&PE, and OIG to resolve their concerns relating to the CDC before the decision would be made to continue the implementation.

In memorandums to the Acting Administrator, ODM&T and OP&PE presented estimates and analyses of the costs and benefits associated with the transfer of the Hines DPC development work on the Target system to the CDC. In an April 10 memorandum, OP&PE concluded that the transfer was not cost beneficial, and in an April 20 memorandum, ODM&T concluded that it was. The primary basis for the different conclusions was a disagreement over the magnitude of the costs of the Target system move (see pp. 7 and 9). Both offices have continued to maintain their positions regarding the Target system transfer--OP&PE recommended further analysis, and ODM&T recommended transferring the system as soon as possible.

VA DID NOT ADEQUATELY CONSIDER THE OVERALL COSTS AND BENEFITS OF THE CDC

In March 1980, when the Administrator's approval was requested to investigate the feasibility of the CDC concept, the Assistant Administrator, ODM&T, stated:

> "This change [the CDC concept] is fundamental to the Agency's method of conducting ADP business. I would not recommend the adoption of such a concept without a detailed examination of its benefits and costs to the Agency."

VA's estimates of the CDC costs and benefits are incomplete. Although detailed estimates have been made for some aspects of the CDC, VA has not prepared an overall, comprehensive analysis of the costs and benefits of establishing the CDC.

The original decisionmaking estimates were incomplete

As previously mentioned, the ODM&T August 1980 report presented probable costs and benefits associated with establishing the CDC in Austin. These estimates were presented in a cost/benefit format

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1/OP&PE is a staff organization responsible for various oversight functions, including ADP activities. OP&PE is also responsible for conducting cost/benefit studies.

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as (1) a projected 5-year cost/benefit ratio of 1.55 (a ratio greater than 1.00 is considered cost beneficial) 1/ with (2) a break-even point, where benefits are expected to equal, then exceed costs, occurring in the second year of CDC operations. The amounts used to compute the cost/benefit ratio are discounted at a 10-percent rate to recognize the time value of money. Discounting accounts for the fact that future costs and benefits become less significant at the present time the further into the future that they are projected. Therefore, money to be expended now or in the immediate future is of more concern than money to be spent several years from now.

The net benefits were based on personnel savings achieved by eliminating 57 end-of-fiscal year 1982 positions--the difference between the number of positions (410) required to support computer program development and maintenance at the five DPCs and the number of estimated positions (353) to perform the same work at the CDC.. In addition, 50 positions from VA's central office were required at the CDC to perform specification writing, but no savings were associated with these positions.

Although the report identified the methodology used to develop the personnel savings (see p. 10), many of the estimated costs were presented without providing the basis or methodology used. For example, $300,000 in severance pay was included without an estimate of the number of personnel whose employment with the Government would be terminated. Recurring costs for travel of $200,000 over a 4-year period--for fiscal years 1982-85--were included without an analysis of the number of trips, personnel, or points of origin and termination. Telecommunication costs were estimated to increase by $230,000 over the same 4-year period, yet there was no network traffic analysis to support these estimates. In addition, estimates were not provided for costs associated with training new hires to replace VA employees choosing not to transfer to the CDC.

In the September 1980 memorandum--the basis of the Administrator's approval of the August report--the Assistant Administrator, ODM&T, referred to the estimates in the report as a general study of

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1/The cost/benefit ratio is a generally accepted summation of the costs and benefits associated with two alternatives--in this case, a comparison was made of the costs of computer program development and maintenance activity (1) under the present, decentralized approach and (2) under the proposed, CDC approach. The ratio (which is computed by dividing the costs of the present approach by the costs of the proposed approach) expresses the payoff to the proposal. For example, a ratio of 1.55 means that for every dollar invested there will be a return of 55 cents, and a ratio of .87 means that for every dollar invested there will be a loss of 13 cents.

probable costs and benefits and went on to state that "more detailed cost determinations will be made as the various phases of the implementation plans are developed."

Additional and more detailed estimates were also incomplete

Using an ODM&T March 1981 study of updated and more detailed estimates of the cost to relocate the Target system development and maintenance work from the Hines DPC to the CDC, OP&PE in its April 10 memorandum provided three cost/benefit ratios computed over 5 years of CDC operations. These ratios ranged from a worst case of 0.72 to a best case of 0.92, with a most probable cost/benefit ratio of 0.87--all of which indicated that moving the Target system and staff from Hines to the CDC was not cost beneficial.

Using the same March study, ODM&T in an April 20 memorandum presented an analysis of the Target system transfer that resulted in a cost/benefit ratio of 1.04 computed over 5 years of CDC operations.

Both the OP&PE and ODM&T analyses used an estimated savings of 14 personnel positions associated with the Target system transfer based on the ODM&T March study. However, based on ODM&T's revised April 8 estimates, the Target system move involved 30 of the 48 position savings to accrue from the CDC by the end of fiscal year 1981. The March study was limited to on-duty staff at the Hines DPC; it did not account for savings derived from the reduction of 4 administrative and 12 vacant technical positions. The OP&PE and ODM&T April analyses should have used the estimated savings of 30 personnel positions associated with the Target system transfer.

A comprehensive picture of the CDC costs and benefits could not be made from current estimates

As mentioned, our examination consisted of comparing VA's estimated costs for computer program development and maintenance work under (1) the present, decentralized or five-DPC approach with (2) the proposed, centralized or CDC approach. Using ODM&T's and OP&PE's methodology as applied in their analyses of the Target system transfer, we identified 63 separate dollar estimates, of which 22 (or about one-third) were either missing or incomplete.

Recurring costs for training and the impact of less efficient, new entry-level programmers were not available for inclusion in the costs of the present approach for the Los Angeles, Philadelphia, and St. Paul DPCs. Following ODM&T's methodology as applied to the Austin and Hines DPCs, these missing estimates would have been based

on the turnover rate at each DPC and would have reflected the recurring costs for training and lower productivity of new entry-level programmers needed to replace more experienced programmers leaving the DPCs. These estimates for the present approach would have been comparable to similar estimates, based on an Austin turnover rate, for the proposed CDC approach. Where the Austin turnover rate was less than a DPC's rate, the cost difference would reflect a benefit of the CDC approach; where the Austin rate was greater, the CDC approach would reflect an increased cost over the present approach.

An example of an incomplete or inaccurate estimate was the 4-year cost--for fiscal years 1982-85--for additional space required at the CDC. The estimates provided varied from ODM&T's $299,800 to OP&PE's $679,000. The low estimate was based on an allotment of 135 square feet per employee, while the high estimate allotted 180 square feet per employee. Both of these estimates are incomplete or inaccurate-after adjusting for needed storage, conference, training, and parking space and unnecessary additional space for a computer, estimated CDC-related space costs over 4 years would be about $429,100. However, this estimate was based on the previously mentioned March 1981 study, which was limited to on-duty staff at the Hines DPC. Using the current April 8 staffing estimates, the cost for additional CDC space for new hires and staff transferring from all DPCs and the central office is about $913,500.

Another example of an incomplete estimate is the one-time cost for project slippage based on an ODM&T statement that there would be a 2- to 3-month slippage in Target system development projects because of their transfer to the CDC. The estimates ranged from ODM&T's $94,600 to OP&PE's $707,586, and both are incomplete.

The $94,600 cost was based on an estimated 3-week period for personnel off-duty time to locate housing and move to Austin. This does not measure the cost impact of a possible 2- or 3-month slippage in development projects. While personnel off-duty time is a legitimate basis for estimating a cost component of the CDC implementation, it was based on the March study, which was limited to the Hines DPC. Using the April 8, 1981, estimates and applying ODM&T's methodology, the cost of personnel off-duty time is

--$111,300 for the Hines DPC move and

--$252,300 for the moves from all DPCs and the central office.

The estimate of $707,586 for project slippage was developed by applying the salaries of all Hines DPC staff subject to the move over a 3-month period. According to an ODM&T official, this estimate was based on strictly interpreting that the ODM&T statement meant that all projects--hence, all associated Target system staff--would be delayed 3 months. ODM&T has objected to this

interpretation and the associated estimate of $707,586. However, since ODM&T has not researched the potential for such project delays, there was no basis available for estimating the cost of project slippage.

The number of missing and incomplete estimates precludes an adequate statement of the costs and benefits associated with the total establishment of the CDC in Austin. While more detailed costs have been prepared, there has not been a comprehensive examination of the costs and benefits of this fundamental change to the way VA conducts its ADP business.

VA DID NOT SUPPORT THE PERSONNEL SAVINGS ASSOCIATED WITH THE CDC

The personnel savings associated with the CDC were based on eliminating 57 personnel positions by the end of fiscal year 1982 at the DPCs; this was revised in April 1981 to the elimination of 48 positions by the end of fiscal year 1981. In developing its projected programmer savings, ODM&T employed a statistically invalid methodology. Also, ODM&T has not been able to provide support for nonprogrammer savings that can be independently verified.

As a result of a mistake in VA's budget submission for fiscal year 1982, ODM&T is committed to a reduction of about 30 staff years 1/ more than intended--the estimated personnel savings from establishing the CDC should have been between 20 and 30 staff years, not 57. However, this mistake would have been minimized by VA's accelerating the CDC implementation and the planned reduction of 48 positions from DPC ceilings by the end of fiscal year 1981.

Invalid methodology used to develop savings

The procedure employed to develop the savings in computer programmer positions was based on an invalid statistical methodology--the general estimate of current programmer productivity of 64 percent is not statistically representative of programmer productivity at the DPCs.

Although the ODM&T August report indicated that "there presently exist no fully acceptable work measurement statistics with which to predict in a totally accurate manner the savings to be realized," the estimated savings in personnel positions were based on increased computer programmer time available for productive work as follows:

1/ This is the same as full-time equivalent or average employment over a fiscal year--as used in VA's budget.

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--"the general estimate of current programmer productive time for the Agency is approximately 64% of available programmer time";

--"a programmer productivity level of 75% [74.5 percent] is one of the primary goals of the Office of Data Management and Telecommunication"; and

--increased programmer productivity was defined as an increase in productive time from 64 to 74.5 percent.

As used by ODM&T, "programmer productive time" constitutes the hours spent by an individual in computer program development or maintenance work, excluding time spent for leave, training, and administrative or clerical tasks. Therefore, a computer programmer's productivity rate is the ratio of the number of hours of programming work, including overtime if incurred, to the total number of work hours available in a reporting period. VA's measure of co uter programmer productivity is simply her/his availability for programming work.

Current programmer productivity of 64 percent was represented as a general estimate for the agency. However, the programmer productive time used to develop this general estimate was based on PACS, an ADP project control system, using actual programmer time reported at the Austin DPC only. Actual programmer time from the Hines, Philadelphia, St. Paul, and Los Angeles DPCs was not included in this estimate because comparable PACS data were not available from these sites.

The VA-wide time reporting system, AMIS, is used to report station workload and productivity data. AMIS is the only system that reports comparable productive time for all the DPCs.

Using programmer productive time reported to AMIS by the five DPCs during fiscal year 1980, we found productive rates ranging from 62 percent for the St. Paul DPC to 74 percent for each of the DPCs at Austin and Hines--with an average or "general estimate" for all DPCs of 72 percent.

The Director, CDC, stated that:

--He would have used PACS data--either as an average or specific rates for each DPC--to develop programmer productivity increases, if such data had been available for the DPCs.

--The AMIS data are not considered as reliable as the PACS data because PACS is used at Austin to hold supervisors accountable for their projects, thereby assuring more intensive supervisory surveillance over the accuracy of programmer input.

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--Programmer productivity data were used to develop estimated programming personnel savings associated with the Hines, Philadelphia, and St. Paul DPCs (they were not used (1) at Los Angeles because of the small number of system development efforts at that DPC and (2) at Austin because of the anticipated increased need to support new development work at the CDC site).

The use of the Austin-based 64-percent programmer productivity rate as an agency estimate is inappropriate because it is not statistically representative of programming productivity at the other DPCs--actual and comparable productivity data were not used to develop the estimate. Employing this estimate to develop programmer-related savings at the Hines, Philadelphia, and St. Paul DPCs is statistically invalid.

However, using the comparable AMIS programmer productivity rates for all DPCs as the agency estimate may also be inappropriate. The Director, CDC, questioned the reliability of the AMIS reports. In addition, there is an unexplained 10-percentage-point difference over the same reporting period between the Austin productivity rates from AMIS (74 percent) and PACS (64 percent). This difference could be a reflection of the rate of error of either or both time reporting systems. Without empirical evidence--for example, the results of a reliability assessment of both systems that ODM&T did not conduct--to reconcile the difference, neither AMIS nor PACS provided a reliable basis upon which to estimate programmer savings.

We do not believe that VA's time reporting systems provide an adequate basis for measuring programmer productivity. Further, ODM&T's use of the Austin-based rate to develop programmer position savings at other DPCs was statistically invalid.

Lack of documentary support for savings

The methodology presented in the ODM&T August 1980 report is misleading because it does not describe the actual procedures used to estimate the savings in personnel positions. Further, the application of the actual methodology--as used to develop the August 1980 estimates and more than half of the savings in the April 8, 1981, revised estimates--cannot be independently verified because ODM&T was not able to provide (1) the number of programmer positions used in its computations or (2) a position-by-position analysis documenting nonprogrammer position savings.

The Director, CDC, stated that the ODM&T August report was incorrect when it indicated that the improved programmer productivity rate of 16.5 1/ percent was applied to 410 personnel positions to yield the gross savings of 68 2/ positions (11 of these positions were reapplied as overhead to determine the net savings of 57 positions).

First, to properly compute the personnel savings due to improved productivity, the formula used by ODM&T required the rate of decrease--14.1 3/ percent--not the rate of increase. The Director, CDC, told us that, notwithstanding the statements in the August report, he applied the correct rate of 14.1 percent.

Second, improved programmer productivity was used only to develop savings in programmer positions--the rate of decrease was not used as a factor to develop all of the savings. The general procedure accounting for 58 of the 68 gross position savings for the St. Paul, Philadelphia, and Hines DPCs was as follows (as mentioned, the Los Angeles and Austin DPC estimates were developed differently):

--First, the initial savings were determined by applying the productivity rate of increase to the estimated number of programming positions required at the DPCs to support development and maintenance work that would be transferred to the CDC.

--Then, the remaining savings for all other or nonprogrammer positions--system and management analysts, supervisors, system auditors, and clerks--were based on the support provided by these positions to the initial savings in programmer positions.

ODM&T was not able to provide the number of programming positions used in the first step, above, in determining the initial savings. While the procedure used to develop the remaining savings in nonprogrammer positions makes sense, ODM&T was not able to

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1/ODM&T computed its rate of increased programmer productivity by subtracting the current productivity rate (64 percent) from ODM&T's goal (74.5 percent) and dividing the difference by the current rate: (.745 - .64)/.64 = .16406, rounding incorrectly to .165.

2/.165 X 410 positions = 67.7, rounding to 68 positions.

3/The rate of decrease is computed by dividing the difference by the goal (74.5 percent): (.745 - .64)/.745 = .1409, rounding to .141.

provide a documented position-by-position analysis or a rationale that could be verified--the rationale given was ODM&T's knowledge of DPC organization and operation.

The April 8, 1981, estimated savings of 48 personnel positions were developed, in part, from the maintenance studies conducted during March and April (see p. 5). While these studies confirmed some of the original personnel savings estimates in the August 1980 report, the support provided for more then half of the 48 positions was given as "management information and knowledge of the current organization and the potential for increasing productivity by centralization of resources."

ODM&T was not able to provide (1) the number of programming positions used to develop its initial savings, upon which most other savings in nonprogrammer positions rest, and (2) a documented position-by-position analysis or other verifiable evidence. Accordingly, the methodology for developing the estimated savings in end-of-year personnel positions expected to accrue from establishing the CDC could not be independently verified.

CONCLUSIONS

VA's examination of the estimated costs and benefits of the CDC was neither complete nor comprehensive enough to support a statement of whether establishing the CDC would be cost beneficial.

While personnel ceiling reductions have been scheduled in anticipation of the savings expected to accrue from CDC operations, these savings are uncertain because they were based on

--a statistically invalid measure of improved programmer productivity and

--a methodology that was not sufficiently documented to permit independent verification.

AGENCY ACTIONS AND OUR EVALUATION

We met with the Administrator-designate on July 7, 1981, and told him that (1) VA's estimated costs and benefits were neither complete nor comprehensive enough to support a statement of whether establishing the CDC would be cost beneficial and (2) the basis for ODM&T's projected personnel savings could not be independently verified.

On July 9, 1981, during confirmation hearings before the Senate Committee on Veterans' Affairs, the Administrator said that apparently no study of the cost effectiveness of the CDC issue clearly supported moving the activity from Hines to Austin and that the move would not be made until such a study was completed.

ENCLOSURE I

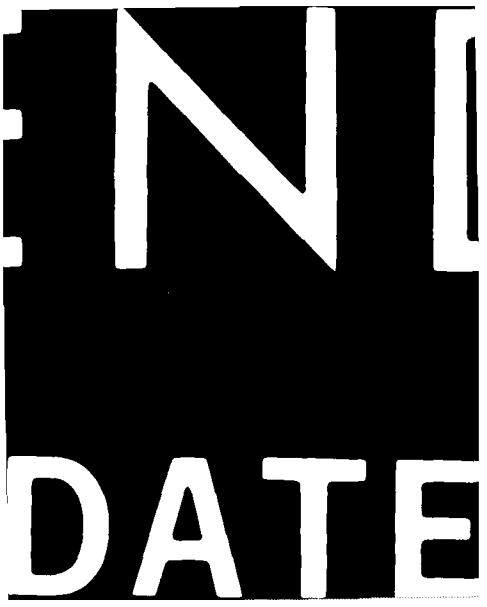
In a July 23, 1981, memorandum, the Administrator stated that he had decided not to transfer the Hines DPC Target system development, maintenance, and associated staff of the CDC:

> "I have concluded that the CDC concept, with its commitment to a highly centralized mode of development management, does not offer the flexibility and access to options that are foreseen to be necessary in dealing with the complex issues that the next few years will bring. Therefore, the CDC implementation program is cancelled as of this date. Compensation, Pension and Education [the Target system] development functions will remain at the Hines Data Processing Center (DPC). The Philadelphia DPC will retain development responsibility for the Insurance System. Development functions presently in place in Austin will be retained but the transfer and recruiting programs related to the cancelled CDC program will be suspended immediately and development center personnel will be organizationally restored to the Austin DPC as it existed prior to January 1981."

In addition, the Administrator requested the Assistant Administrator, ODM&T, to submit a plan to organize the Austin DPC into two components--development and operations.

While plans had not been implemented, we were told on July 28, 1981, by the Assistant Administrator, ODM&T, that the Administrator's July 23 decision effectively established two major VA computer system development centers--at the Austin and Hines DPCs--and a smaller center at the Philadelphia DPC. He said he will propose that the development and maintenance work at each of the two major centers be separately managed and that a development pool of ADP analysts and programmers be established at these two DPCs. However, he does not intend to propose similar actions regarding the Philadelphia DPC because the insurance system development effort is relatively minor and of short duration.

Because of the Administrator's decision and since the proposals have not been implemented, we are making no recommendations at this time.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